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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): Hull et al.
Case: 5-4-1-4
Serial No.: 09/251,998
Filing Date: February 19, 1999
Group: 2143
Examiner: David E. England

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Signature: Bobbette Blat Date: December 22, 2005

Title: Eager Evaluation of Tasks in a Workflow System

TRANSMITTAL OF REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is a Reply Brief relating to the above-identified patent application.

In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Deposit Account No. 50-0762** as required to correct the error. A duplicate copy of this letter and a copy of the Reply Brief are enclosed.

Respectfully,

Kevin M. Mason

Date: December 22, 2005

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REPLY BRIEF

Mail Stop Appeal Brief – Patents
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Alexandria, VA 22313-1450

Sir:

Appellants hereby reply to the Examiner's Answer, mailed November 3, 2005 (referred to hereinafter as "the Examiner's Answer"), in an Appeal of the final rejection of claims 1-21 in the above-identified patent application.

REAL PARTY IN INTEREST

A statement identifying the real party in interest is contained in Appellants' Appeal Brief.

RELATED APPEALS AND INTERFERENCES

A statement identifying related appeals is contained in Appellants' Appeal Brief.

STATUS OF CLAIMS

A statement identifying the status of the claims is contained in Appellants' Appeal Brief.

STATUS OF AMENDMENTS

A statement identifying the status of the amendments is contained in Appellants' Appeal Brief.

SUMMARY OF CLAIMED SUBJECT MATTER

A Summary of the Invention is contained in Appellants' Appeal Brief.

STATEMENT OF GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A statement identifying the issues presented for review is contained in Appellants' Appeal Brief.

CLAIMS APPEALED

A copy of the appealed claims is contained in an Appendix of Appellants' Appeal Brief.

ARGUMENT

First Argument

In response to Applicant's first argument, the Examiner asserts that, in the cited area of the specification given by the Applicant, there is no disclosure of where the task is being executed in the workflow system or what part of the workflow system is performing the processing of the task, and that whether or not it has a side-effect action is not the question nor where the side-effect action occurs.

Appellants note that where the task is being executed in the workflow system or what part of the workflow system performs the processing of the task is a design choice, as would be apparent to a person of ordinary skill in the art.

Second Argument

In response to Applicant's second argument, the Examiner asserts that, since it is not explicitly stated in the independent claims what would specifically constitute a "side-effect action," one would interpret as broadly as possible. Appellants maintain, however, that, by definition, an action initiated by the execution of a task could only be considered a ***side-effect*** (of the task execution) if it were a result of the task execution; an action initiated by an ***external*** *component or event* could not be considered a side-effect of the task execution.

Third Argument

In response to Applicant's third argument, the Examiner asserts that the switch control register 410, which can be interpreted as "one or more enabling conditions" has a value of one. Appellants note that, regarding switch control register 410, Borkenhagen teaches that

> thread switch logic 400 comprises a thread switch control register 410 which *controls what events will result in a thread switch.* For instance, the thread switch control register 410 can *block events that cause state changes from being seen by the thread switch controller 450 so that a thread may not be switched as a result of a blocked event. The thread state registers and the logic of changing threads are the subject of a U.S. patent application Ser. No. 08/957,002*, filed concurrently and herein incorporated by reference. The forward progress count register 420 is used to prevent thrashing and may be included in the thread switch control register 410.
> (Col. 10, lines 39-50; emphasis added.)

Borkenhagen also teaches that

> the thread switch control register 410 is a software programmable register which *selects the events to generate thread switching and has a separate enable bit for each defined thread switch control event.* Although the embodiment described herein does not implement a separate thread switch control register 410 for each thread, separate thread switch control registers 410 for each thread could be implemented to provide more flexibility and performance at the cost of more hardware and complexity. Moreover, the thread switch control events in one thread switch control register need not be identical to the thread switch control events in any other thread switch control register.
>
> The thread switch control register 410 can be written by a service processor with software such as a dynamic scan communications

> interface disclosed in U.S. Pat. No. 5,079,725 entitled Chip Identification Method for Use with Scan Design Systems and Scan Testing Techniques or by the processor itself with software system code. The contents of the thread switch control register 410 is used by the thread switch controller 450 *to enable or disable the generation of a thread switch.* A value of one in the register 410 enables the thread switch control event associated with that bit to generate a thread switch. A value of zero in the thread switch control register 410 disables the thread switch control event associated with that bit from generating a thread switch. Of course, an instruction in the executing thread could disable any or all of the thread switch conditions for that particular or for other threads. The following table shows the association between thread switch events and their enable bits in the register 410.
> (Col. 14, lines 3-30; emphasis added.)

Appellants maintain that the value stored in a switch control register *is **not** a state of a task* and is ***not** an enabling condition,* as defined in claims 1 and 12 and page 2 of the specification (see, Appellants argument regarding claims 2 and 13 in the Appeal Brief).

Fourth Argument

In response to Applicant's fourth argument, the Examiner asserts that the Applicant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Appellants maintain, however, that the Examiner's citation in the Examiner's Answer (regarding Appellant's argument for claims 3 and 14) specifically points out how the language of the claims patentably distinguishes them from the references since claims 3 and 14 recite this language. More specifically, in the Appeal Brief, Appellants argued that no disclosure or suggestion could be found "in Borkenhagen that Borkenhagen determines that a task is eligible for eager execution prior to determining that an associated enabling condition will evaluate to true, as claimed in dependent claims 3 and 14." This argument specifically points out how the language of the claims patentably distinguishes the cited claims from the references.

Fifth Argument

In response to Applicant's fifth argument, the Examiner asserts that the Applicant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically

pointing out how the language of the claims patentably distinguishes them from the references. Appellants maintain, however, that the Examiner's citation in the Examiner's Answer specifically points out how the language of the claims patentably distinguishes them from the references since claims 5 and 16 recite this language. More specifically, in the Appeal Brief, Appellants argued that no disclosure or suggestion could be found "in Borkenhagen to determine whether a task contributes to the production of a target value. In fact, Applicants could find no disclosure or suggestion by Borkenhagen of a target value." This argument specifically points out how the language of the claims patentably distinguishes the cited claims from the references.

Sixth and Seventh Arguments

In response to Applicant's sixth and seventh arguments, the Examiner asserts that the teaching of Boutaud in regard to an "IF THEN ELSE" condition code reads on what could be interpreted as "partially evaluating." Appellants note that, contrary to the Examiner's assertion, an "IF THEN ELSE" condition implies that the entire "IF" condition is evaluated to determine whether the "THEN" or "ELSE" actions are executed. Boutaud does not disclose or suggest evaluating only a part of the "IF" condition. As the Examiner notes, the present disclosure teaches that only a portion of a condition (e.g., "cust value < 7") may be evaluated.

Eighth Argument

In response to Applicant's eighth argument (labeled by the Examiner as the (second) seventh argument), the Examiner asserts that, "in Van Praet, it is taught in figure 5 and column 5, lines 53 et seq., graphing data flow dependencies and enabling flow dependencies as data flow graph (DFG) and instruction set graph (ISG), ('In this way the same relations are obtained as depicted in Fig. B, but with DFG and an ISG of much lower complexity'). As to further support the teachings of Van Praet, the ISG it taught to have a set of instructions that enables an operation I in the ISG is called its enabling condition and denoted by enabling(i), (e.g., col. 8, lines 64 - col. 9, line 15)."

As noted in the Appeal Brief, Van Praet discloses a "bipartite" graph where vertices represent storage elements in a processor or operations of a processor, and where edges represent connectivity of a processor and data flow from storage. See col. 8,

lines 51-57 of Van Praet. Smith discloses a graph where each node represents a logic gate and the branches represent input or output lines. See col. 5, lines 51-58 of Smith.

In the present invention, as described above, a task has one or more associated enabling conditions indicating whether the task is to be executed for an object (see, e.g., independent claims 1 and 12). Furthermore, a task can produce an output that is used in an enabling condition for another task. See, for instance, FIG. 26 and associated text on pages 36 and 37 of the present specification, where it states the following:

> This diagram illustrates the data flow dependencies and the enabling flow dependencies of the workflow described above. Each of the modules (ovals) and enabling conditions (hexagons) are represented as nodes with solid line data flow edges representing data flow dependencies and broken line enabling flow edges representing enabling flow dependencies.

If a "task" of the present invention is a store element or processor of Van Praet, while Van Praet might, for sake of argument, show a data flow dependency in a graph, there is no disclosure of an enabling flow dependency in the graph. Similarly, if a "task" of the present invention is a logic gate, while Smith might, for sake of argument, show a data flow dependency in a graph, there is no disclosure of an enabling flow dependency in the graph. In other words, in both Van Praet and Smith, only one data dependency (e.g., "edge" or "connection") is shown between nodes, while claims 10 and 20 require two types of data dependencies.

Conclusion

The rejections of the cited claims under section 103 in view of Borkenhagen et al., Boutaud et al., Van Praet et al., and Smith et al., alone or in combination, are therefore believed to be improper and should be withdrawn. The remaining rejected dependent claims are believed allowable for at least the reasons identified above with respect to the independent claims.

The attention of the Examiner and the Appeal Board to this matter is appreciated.

Respectfully,

Date: December 22, 2005

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EVIDENCE APPENDIX

There is no evidence submitted pursuant to § 1.130, 1.131, or 1.132 or entered by the Examiner and relied upon by appellant.

RELATED PROCEEDINGS APPENDIX

There are no known decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 CFR 41.37.